AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently Amended) A diamond n-type semiconductor comprising a first diamond semiconductor ~~having~~ which has n-type conduction and in which a distortion or defect is artificially formed, [[;]]

wherein [[,]] in said first diamond semiconductor, a conductor exhibits an electron concentration negatively correlated with temperature in a temperature range ~~of at least~~ which has a width of 100°C or more and is included within ~~at least the~~ a temperature region from 0°C to 300°C.

2. (Currently Amended) A diamond n-type semiconductor according to claim 1, wherein, in said first diamond semiconductor, the conductor exhibits a Hall coefficient positively correlated with temperature in a temperature range ~~of at least~~ which has a width of 100°C or more and is included within ~~at least~~ the temperature region from 0°C to 300°C.

3. (Currently Amended) A diamond n-type semiconductor according to claim 1, wherein the temperature range, ~~exists over at least 200°C~~ included within the temperature region from 0°C to 300°C, has a width of over 200°C or more.

4. (Currently Amended) A diamond n-type semiconductor according to claim 1, wherein said first diamond semiconductor has a resistivity of 500 Ωcm or less at ~~least at~~ a temperature within the temperature region from 0°C to 300°C.

5. (Currently Amended) A diamond n-type semiconductor according to claim 1, wherein the electron concentration of said first diamond semiconductor is always ~~at least~~ 10^{16} cm^{-3} or more in the temperature region from 0°C to 300°C.

6. (Previously Presented) A diamond n-type semiconductor according to claim 1, wherein said first diamond semiconductor contains more than 5×10^{19} cm^{-3} in total of at least one kind of donor element.

7. (Original) A diamond n-type semiconductor according to claim 6, wherein said first diamond semiconductor contains at least P (phosphorus) as the donor element.

8. (Original) A diamond n-type semiconductor according to claim 6, wherein said first diamond semiconductor contains at least S (sulfur) as the donor element.

9. (Currently Amended) A diamond n-type semiconductor according to claim 1, wherein said first diamond semiconductor contains an impurity element other than [[the]] a donor element together with the donor element.

10. (Currently Amended) A diamond n-type semiconductor according to claim 9, wherein said first diamond semiconductor contains ~~at least~~ Si of 1×10^{17} cm^{-3} or more ~~of Si~~ as the impurity element.

11. (Previously Presented) A diamond n-type semiconductor according to claim 1, wherein said first diamond semiconductor is monocrystal diamond.

12. (Previously Presented) A diamond n-type semiconductor according to claim 1, further comprising a second diamond semiconductor provided adjacent to said first diamond semiconductor and turned out to be n-type,

wherein, in said second diamond semiconductor, a conductor exhibits an electron concentration not negatively correlated with temperature and a Hall coefficient not positively correlated with temperature.

13. (Previously Presented) A semiconductor device at least partly employing a diamond n-type semiconductor according to claim 1 .

14. (Previously Presented) An electron emitting device having the diamond n-type semiconductor according to claim 1 employed in at least an electron emitting part thereof.

15. (Currently Amended) A method of manufacturing a diamond n-type semiconductor ~~according to claim 1~~ , said method comprising the steps of:

preparing a diamond substrate; and

epitaxially growing ~~said first~~ a diamond semiconductor on said diamond substrate while artificially introducing an impurity element other than a donor element to said diamond substrate, whereby said diamond semiconductor has n-type conduction and has a distortion or defect which is artificially formed therein,

wherein, in said diamond semiconductor, a conductor exhibits an electron concentration negatively correlated with temperature in a temperature range which has a width of 100°C or more and which is included within the temperature region from 0°C to 300°C.

16. (Original) A method of manufacturing a diamond n-type semiconductor according to claim 15, wherein Si is artificially introduced as the impurity element to said diamond substrate.